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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,164	12/05/2003	Ajay Divakaran	MERL-1470	8566

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EXAMINER
SAINT CYR, LEONARD

ART UNIT	PAPER NUMBER
2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/729,164	DIVAKARAN ET AL.
	Examiner	Art Unit
	Leonard Saint-Cyr	2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-20_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1 – 5, 8, 11 –14, 17, 19, and 20 are rejected under 35 U.S.C. 102(b) as

being anticipated by Leonardi et al., (Semantic Indexing if Multimedia Documents).

As per claim 1, Leonardi et al., teach a method for detecting highlights from

videos, comprising:

extracting audio features from the video ("divide the input stream into audio and

video"; page 46, col.2, lines 39 – 43);

classifying the audio features as labels (page 47, col.1, lines 9 – 14);

extracting visual features from the video ("divide the input stream into audio and

video"; page 46, col.2, lines 39 – 43);

classifying the visual features as labels ("two-state-HMM classifier"; page 47,

col.1, lines 38 – 43); and

fusing, probabilistically, the audio labels and visual labels to detect highlights in

the video ("calculated four different performance indices"; page 49, col.1, lines 3 – 9).

As per claim 2, Leonardi et al., further disclose that the video is compressed (" MPEG-2"; page 45, col.1, line 26).

As per claim 3, Leonardi et al., further disclose that silent features are classified according to audio energy and zero cross rate ("extracts a feature vector from the low-level acoustic properties of each clip such as zero crossing rate"; page 46, col.2, lines 46 – 50).

As per claim 4, Leonardi et al., further disclose that the audio features are MeL-scale frequency cepstrum coefficients (page 46, col.2, lines 46 – 50).

As per claim 5, Leonardi et al., further disclose that the audio features are MPEG-7 descriptors (page 50, col.2, line 13).

As per claim 8, Leonardi et al., further disclose the visual features are based on motion activity descriptors ("motion vectors" page 46, col.2, lines 50 – 53).

As per claim 11, Leonardi et al., further disclose the motion activity is averaged to obtain the visual labels (page 45, col.2, lines 36 – 38).

As per claim 12, Leonardi et al., further disclose the visual labels are selected from the group consisting of close shot, replay, and zoom (page 46, col.2, lines 1 – 12).

As per claim 13, Leonardi et al., further disclose the probabilistic fusion uses a discrete-observation coupled hidden Markov model (page 47, col.1, lines 31 – 41).

As per claim 14, Leonardi et al., further disclose the discrete-observation coupled hidden Markov model includes audio hidden Markov models and visual hidden Markov models (page 47, col.1, lines 31 – 41).

As per claim 17, Leonardi et al., further disclose the video is a sport video ("soccer video"; page 45, col.1, lines 1 and 2).

As per claims 19, and 20, Leonardi et al., further disclose the audio portion of the video is compressed, and the visual portion of the video is compressed ("MPEG-7 content of audio-visual program"; page 50, col.2, lines 12 – 20).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonardi et al., (Semantic Indexing if Multimedia Documents, April –June 2002), in view

Rui et al., (Automatically Extracting Highlights for TV Baseball Programs, Eighth ACM International Conference on Multimedia, pp.105 – 115, 2000)

As per claim 6, Leonardi et al., do not specifically teach that the audio features are classified using Gaussian mixture models.

Rui et al., teach excited speech classification using Gaussian fitting (section 6.5, lines 1 and 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Gaussian mixture models as taught by Rui et al., in Leonardi et al., because that would help better classify the audio signal.

As per claim 7, Leonardi et al., further disclose that audio labels are selected from the group consisting of applause, cheering, and music ("background noise" page 47, col.1, lines 12 – 14).

However, Leonardi et al., do not specifically teach audio labels are selected from the group consisting of ball hit, speech with music, male speech and female speech.

Rui et al., teach classifying audio signals into silence, speech, music, song, and mixtures of the above, Baseball hit detection (section 5.2; section 2, paragraph 6, lines 11, and 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to classify the audio signals as taught by Rui et al., in Leonardi et al., because that would help better determine the highlights of the soccer video.

The examiner takes official notice that classifying speech between male speech and female speech is well known in the art. One having ordinary skill in the art would have found it obvious to classify the audio as male speech and female speech, because that would help determine particular scenes of the multimedia documents.

5.   Claims 9, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonardi et al., (Semantic Indexing if Multimedia Documents, April –June 2002), in view Wang et al., (Integration of Multimodal Features For Video Scene Classification based on HMM, 1/99).

As per claim 9, Leonardi et al., further disclose that visual features include motion vectors ("motion vectors" page 46, col.2, lines 50 – 53).

However, Leonardi et al., do not specifically teach that visual features include dominant color.

Wang et al., teach visual features include the most dominant color (page 54, paragraph 2, lines 6, and 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the most dominant color in visual features as taught by Wang et al., in Leonardi et al., because that would help better classify the video signal, so that highlights can be found.

As per claim 10, Leonardi et al., do not specifically teach that the variance of the motion activity is quantized to obtain the visual labels.

Wang et al., teach that visual features include the most dominant color, the most dominant notion vectors, and the mean and variance of motion vector. We quantize the colors of each video frame into 64 colors adaptively (page 54, paragraph 2, lines 6 – 9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to quantize the variance as taught by Wang et al., in Leonardi et al., because that would help better classify the video signal, so that highlights can be found.

As per claim 15, Leonardi et al., do not specifically teach that the discrete-observation coupled hidden Markov model is generated from a Cartesian product of states of the audio hidden Markov models and the visual hidden Markov models, and a Cartesian product of observations of the audio hidden Markov models and the visual hidden Markov models.

Wang et al., teach training an HMM for each of the audio, color, and motion modalities separately. The observed sequences of different features are fed into the corresponding HMM. The final observation probability is computed as... (page 55, paragraph 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to calculate Cartesian product of HMMs as taught by Wang et al., in Leonardi et al., because that would help determine particular scenes of the multimedia documents.

6.   Claims 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Leonardi et al., (Semantic Indexing if Multimedia Documents, April –June 2002), in

view of Rui et al., (US PAP 2003/0103647).

        As per claim 16, Leonardi et al., training the discrete-observation coupled hidden

Markov model ("training two-state HMM"; page 47, col.1, lines 40, and 41).

        However Leonardi et al., do not specifically teach training with hand labeled

videos.

        Rui et al., teach that training set is view –labeled in that each face image is

manually labeled (paragraph 95).

        Therefore it would have been obvious to one of ordinary skill in the art at the time

the invention was made to manually label videos as taught by Rui et al., in Leonardi et

al., because that would help better classify the video signals.

        As per claim 18, Leonardi et al., do not specifically teach determining likelihoods

for the highlights; and thresholding the highlights.

        Rui et al., disclose that multi-cue tracking module includes an observation

likelihood module (paragraph 109); detecting candidates for new face regions, wherein

each candidate is a region of the video content that potentially includes a new face.

Generating a confidence level for each candidate, if the confidence level doe not

exceed the threshold value, the candidate is discarded (paragraph 41).

        Therefore it would have been obvious to one of ordinary skill in the art at the time

the invention was made to threshold candidate face regions as taught by Rui et al., in

Leonardi et al., because that would help determine particular scenes by rejecting non relevant scenes.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.   ·

Cabasson et al., (US Patent 6,956,904) teach summarizing videos using motion activity descriptors correlated with audio features.

Pan et al., (US PAP 2004/0017389) teach summarization of soccer video content.

Li et al., (US Patent 7,143,354) teach summarization of baseball video content

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard Saint-Cyr whose telephone number is (571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LS
04/06/07

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SUPERVISORY PATENT EXAMINER